

# THE EARLY STAGES OF INDIAN LEPIDOPTERA.

BY

D. G. SEVASTOPULO, F.R.E.S.

## PART XII.

(Continued from page 87 of this Volume)

### RHOPALOCERA

#### PAPILIONIDAE

*Graphium doson* Fldr., *eleius* Fruhs.

Davidson & Aitken, *Journ. Bomb. Nat. Hist. Soc.*, v, 364, pl. E, figs. 2, 2a. 1890.

Moore, *Lep. Ind.*, v, 1 and 4, pl. 467, figs. 1, 1a, pl. 468, figs. 1, 1a. 1903.

Bingham, *Fauna Brit. Ind.*, Butterflies, ii, 107. 1907.

Jordan, *Seitz Indo-Austr. Rhop.*, ix, 96. 1909.

Talbot, *Fauna Brit. Ind.*, Butterflies, i, (2nd edit.), 222, pl. 1, figs. 20, 21. 1939.

Half-grown larva—Head honey colour. Body a velvety nigger brown, rather darker at the beginning of the instar and paler at the end. A sublateral white stripe from 6th to anal somite, where the stripes on each side are joined by a wide transverse band. Thoracic somites each with a black, short-branched, subdorsal spine. 12th somite with a white, short-branched, subdorsal spine, but closer together than the thoracic series. Legs nigger brown. Prolegs and anal claspers white. Venter pale nigger brown from 1st to 6th somite and whitish thereafter. Shape with the thoracic somites much swollen, the 3rd largest, and then tapering towards the tail.

Penultimate instar—The spines on the 2nd and 3rd somites unbranched, otherwise similar to previous instar. The colour often a pale bronzy green.

Full-grown larva—Head pale bluish green, slightly retractile. Colour leaf green, a sublateral white stripe from 6th somite backwards, but not joined by a transverse bar across the anal somite. Legs, prolegs and venter pale bluish green. A distinct sublateral fringe of short, white bristles. Spiracles whitish edged by a fine black line. Shape similar to previous instars, but the spines on the 1st and 2nd somites absent and that on the 3rd reduced to a raised black dot in the centre of a black-ringed, yellow spot. 1st somite with a transverse black line across the osmeterium pouch, which is slightly angled subdorsally. Osmeterium pale bluish green and only extruded reluctantly. Some larvae are a distinct bronzy green, in which case the tubercles on the thorax and anal somite seem slightly larger.

Pupa suspended by a girdle and tail pad of white silk. Shape head truncate, with a very short conical projection in front of each eye. Thorax with the keel developed into a forward-pointing horn, extending frontally to above the front edge of the head. A slight projection at the origin of the wing cases. Body fairly wide across the wing cases and then tapered to the cremaster. Colour pale watery green. A dark purplish median line from the posterior edge of the head to the apex of the thoracic horn. A raised yellow line from the tip of the thoracic horn along the upper edge of the wing case and then continued to the cremaster as a sublateral line. A slightly curved, whitish, subdorsal line from the cremaster to the origin of the thoracic horn, where the two lines join, this line edged above with dark green which gives it the appearance of being raised. The cuticle very coarsely and deeply punctate, the punctures above the sublateral lines filled in with dark green and forming faint, oblique, dark stripes between the sublateral and subdorsal lines, the punctures on the dorsum also filled in with dark green but not forming stripes. A pupa found wild under the coping of a white-washed wall, had the ground colour a greenish-grey, the subdorsal and sublateral lines brownish purple, the oblique lateral stripes brownish purple, an indistinct brownish purple dorsal line and brownish purple specks on the head, thorax and wing cases.

Food-plant—*Polyalthia longifolia* Wall, and *Michelia champaca* L. Talbot gives *Cinnamomum*, *Polyalthia* and other Anonaceae.

Described from a number of larvae found in Calcutta in October 1942, one of which pupated 13-x-42 and a female emerged 24-x-42.

The first of the two references of Moore is for the Southern Indian and Ceylonese race, then known as *jason* L., the second is for the race *axion* Fldr. from Kumaon to Burma. Jordan's description applies to the species generally, and is as follows:—'Larva black or green, the spines of the mesonotum absent and those of the third pair reduced to tubercles. Pupa varies in colour according to its environment; angles of the head distinctly projecting, thoracic horn bent forwards, gradually pointed, the tip itself rounded, the carinae of the horn sharp and straight.' The same description by Davidson & Aitken is quoted under *eleius* by Talbot and under *jason* by Bingham, this is as follows:—'larva very like that of *G. agamemnon* L., but the second pair of spines is entirely wanting and the third pair, which in *agamemnon* is rather long, curved and sharp, is reduced in this species to mere knobs encircled with a black ring. The colour is generally black or smoky until the last moult and then dull green, inclining to rusty brown on the sides, but some of our specimens remained quite black till the end. Pupa—the distinguishing mark of the pupa is again in the frontal horn, which is straight as in *agamemnon*, but directed forward instead of being almost erect. Its colour is normally green, but varies with that of the object to which it is attached.' Bingham adds, under *axion*, that the larva and pupa are very similar to those of *jason*, but that Moore figures the larva with a red lateral spot on the 3rd segment. Talbot's figures are not very life-like. My pupae were formed on leaves and on the dark, rusty sides of a large tin, but, in spite of the remarks quoted above, all were pale green.

## LYCAENIDAE.

*Chilades laius* Cr., *laius*.

Moore, *Cat. Lep. E. I. Co.*, i, 21, pl. 12, fig. 1a. 1857.

Bingham, *Fauna Brit. Ind.*, Butterflies, ii, 366. 1907.

Pupa of the usual Lycaenid shape, short, head and anal end obtuse, the thorax and abdomen rounded with a slight depression between the two. Formed on a leaf of the food-plant on a mat of white silk and supported by a girdle. Colour bright leaf green, a dark dorsal line on the abdomen, pro-thorax with a median black streak, a black dot in the centre of the meso-thorax and another lateral dot above the edge of the wing case, a lateral black dot on the meta-thorax and 1st abdominal somite above the edge of the wing case. Spiracles white.

Described from a pupa found in Calcutta 12-x-42, from which a female emerged 18-x-42.

Bingham, quoting a description by de Niceville, writes:—'Pupa green; of the usual Lycaenid shape, with a dorsal and lateral series of somewhat obscure conjoined brownish spots on the upper-side. Attached to the underside of the leaves of its food-plant in the usual manner.' My specimen was attached to the upper surface of an orange leaf.

## HETEROCERA

## ARCTIIDAE.

*Asota caricae* Bsd. (*alciphron* Cr.).

Sevastopulo, *Journ. Bomb. Nat. Hist. Soc.*, xl, 402. 1938.

Gardner, *Indian Forest Records*, vi, 295. 1941.

Although the pupa of this species is usually formed in a slight cocoon on, or just below, the surface of the soil, in October 1942 in Calcutta I found a number of pupae in slight cocoons in spun-together leaves of the food-plant; in several instances these spun-up leaves contained two pupae in the one cocoon.

My original description of this pupa is somewhat brief, a fuller one is as follows. Pupa dark reddish brown, very shiny. Noctuid in shape. The cremaster consisting of a transverse row of four very short spines, with a second row of four spines, considerably further apart, behind the first row. These spines barely visible without a lens.

## LYMANTRIIDAE.

*Lymantria nigra* Moore.

Gardner, *Indian Forest Records*, iii, 194, pl. iv, figs. 32, 33. 1938.

Head dull black, marked with dull greyish brown on the vertex on each side of the median suture, and in the middle of, and on the lower edge of, each cheek; the clypeus containing a dull pink line. Body brownish grey, a double black dorsal line from the 5th to anal

somite, and an oblique black subdorsal line on each somite from 4th to 12th. 2nd and 3rd somites each with a velvety black, transverse dorsal fold, edged behind with very short crimson bristles mixed with longer black ones. 1st somite with a pair of blue-grey dorsal warts armed with black bristles and a subdorsal tubercle tufted with long, blue-black, simple hairs, a fringe of pale buff hair projecting over the head. 2nd and 3rd somites with a transverse series of four dorsal blue-grey warts armed with black bristles immediately behind the dorsal fold. 4th to 11th somites each with a dorsal pair of small blue-grey warts, a larger subdorsal wart posterior to the dorsal pair and a lateral wart, all armed with black bristles. A lateral and sub-lateral series of brownish grey tubercles tufted with longish plumose and simple pale brown hair. 12th somite with a backward pointing fringe of pale brown hair. A pale diamond-shaped dorsal mark extending from the posterior half of somite 7 to the anterior portion of 9. Dorsal glands black. Spiracles greyish brown ringed with black. Legs pale greyish brown. Venter and prolegs brownish grey tinged with greenish. Under a lens the ground colour is seen to be marbled with darker and paler.

Pupa in a few netted threads of brown silk. Dark reddish brown, the wing cases darker. Head, thorax and the dorsum of the abdomen thickly clothed with curly buff hair, intermixed on the head, pro- and meso-thorax with red-brown. Wing cases bare. A subdorsal, lateral and ventro-lateral series of tufts of short whitish hair on the abdominal somites. Thoracic spiracle set in a large black spot. Cremaster a stout spine terminating in a cluster of golden-brown, hooked bristles.

Food-plant Mango (*Mangifera indica* Linn.).

Described from a full-fed larva found in Calcutta 11-xi-42, pupated 14-xi-42, and a female emerged 21-xi-42.

*Porthesia xanthorrhoea* Koll.

Gardner, *Indian Forest Records*, iii, 205. 1938.

Head black, the clypeus outlined with white and with a transverse white bar above the mouth parts. 1st to 3rd somites deep yellow. 1st somite with a double longitudinal black dorsal streak, a subdorsal black tubercle tufted with longish black hair, and a subdorsal black band. 2nd and 3rd somites with a black dorsal line, a subdorsal series of short transverse black streaks, and a transverse series of six warts tufted with short black and grey hair, the two centre and the outer warts yellow, the others grey. 4th somite black, with two orange subdorsal spots, slightly humped—the hump surmounted by a double tuft of short black hair, a black subdorsal wart tufted with black hair. 5th somite similar, but without the orange subdorsal spots and the hump and wart giving rise to palmate white scales instead of black hair. 6th to 10th somites orange with a black dorsal line and indistinct black subdorsal stripe, a subdorsal and lateral series of black warts armed with palmate white scales and a few black hairs. 11th somite similar, but with a broad black band across the dorsum and the warts without white scales. 12th somite orange with a black dorsal line and subdorsal spot, a transverse fringe of long black hairs. A sublateral series of scarlet warts from the 2nd to 11th somite, with a fringe of outward pointing grey

hair. Dorsal glands red. Legs black banded with whitish. Prolegs yellowish. Venter yellowish with a blackish median stripe.

Pupa in a cocoon of orange-brown silk mixed with larval hairs. Colour yellowish brown, the thorax somewhat darker and with a diffuse subdorsal stripe from 4th to 9th somite. 4th to 7th somites with a double subdorsal series of swollen blotches. Spiracles black.

Food-plant—*Lagerstroemia indica* L. in captivity.

Described from a full-fed larva found in Calcutta 20-x-42, spun 24-x-42, and a female emerged 1-xi-42.

*Euproctis lunata* Wlk.

Forsayeth, *Trans. Ent. Soc.*, pl. 14, figs. 5a-c. 1884.

Hamps., *Fauna Brit. Ind.*, Moths, i, 473. 1892.

Gardner, *Indian Forest Records*, iii, 206. 1938.

Head brownish olive, marked with white above the mouth parts. Body blackish. A broad white dorsal stripe with a black median line, interrupted between the somites, from the 6th to 11th somite, an interrupted pinkish lateral and whitish sublateral line, the latter much broader on the 10th and 11th somites. A transverse white dorsal band on the 12th somite. 1st somite with a dark red subdorsal tubercle tufted with grey hair and a dorsal fringe of grey hair projecting over the head. 2nd and 3rd somites with a transverse dorsal series of four greyish warts tufted with forward-pointing grey hair. 4th and 5th somites slightly humped dorsally and with paired dorsal tufts of short black hair, a broad white subdorsal stripe on these somites only. 6th somite with a double dorsal tuft of white hair. 6th to 10th somites with a subdorsal series and 4th to 11th with a lateral series of small black warts bearing very minute orange spines and longish blackish hairs. A sublateral series of reddish pink warts tufted with grey hairs forming a fringe from 1st to 11th somite. 11th somite with a small dorsal tuft of white hair. 12th somite with a transverse fringe of grey hair. A few minute white spines scattered throughout the white dorsal stripe. Dorsal glands white. Legs pink. Prolegs and venter pinkish grey.

Pupa in a cocoon of brown silk mixed with larval hair and spun in a leaf. Olive brown, the abdomen tinged with blackish except for a dorsal stripe on the 3rd to 7th abdominal somites. Clothed with short brownish hairs except on the wing cases.

Food-plant—*Carissa carandas* L. Gardner gives *Terminalia tomentosa* W. & A. and *Cinnamomum camphora* F. Nees.

Described from a full-fed larva found in Calcutta 16-x-42, spun 18-x-42, and a female emerged 29-x-42.

Hampson's description is 'larva brown, with anterior, posterior, and lateral tufts of long hair; thoracic somites with dorsal quadrate white marks; the third somite with paired dorsal tubercles; fifth to anal somites with paired dorsal quadrate white marks. Spins a hairy cocoon on twigs.' Gardner's description deals mainly with structure.

SPHINGIDAE.

*Acherontia lachesis* F.

Moore, *Lep. Ceyl.*, ii, 6, pl. 77, figs. 1b, 1c. 1882-83.

Hamps., *Fauna Brit. Ind.*, Moths, i, 68. 1892.

Mell, *Biol. u. System. der Sudchin. Sphing.*, 10, pl. xxi, fig. 1, pl. xv, figs. 1, 2. 1922.

Seitz, *Seitz Indo-Austr. Bombyces*, x, 526. 1928.

Bell & Scott, *Fauna Brit. Ind.*, Moths, v, 56, pl. i, figs. 1, 2, pl. vii, fig. 8, pl. xiii, fig. 1. 1937.

Head green with a broad black lateral stripe. Body yellowish green, venter and subspiracular area bluer. 4th to 10th somites with oblique lateral stripes, composed of an upper violet stripe shading into blue above and a lower cream stripe shading into yellow beneath the posterior stripe continued faintly to base of horn. Dorsum from 4th to 10th somites dotted with dark blue along the middle of the secondary divisions. Legs black. Prolegs same as venter. Spiracles black. Horn fairly thick basally, tapering to a point, downcurved slightly with the end curved strongly upwards and forwards, studded with large tubercles, colour yellowish green shading into yellow at the tip. The thoracic somites with the secondary rings forming dorsal ridges, most pronounced on the 2nd somite.

There are also brown and yellow forms of the larva but I have not met with them in Calcutta.

Pupa in a hollowed out subterranean cell, the walls apparently secured by pressure as there is no trace of silk. Dark mahogany brown, the wing cases and venter slightly paler. Proboscis sheath short and with prominent transverse ridges. Spiracles on the 8th to 10th somites with a ridged patch immediately in front of them. Meta-thorax with a pair of dorsal, pear-shaped, sunken patches surrounded by a raised ring. Cremaster black, the dorsal surface with large raised warts, terminating in two inwardly curving spines.

Both the larva and pupa make a squeaking noise.

Food-plant—Bell & Scott give the following:—*Erythrina* spp., *Jasminum* spp., *Nyctanthes arbor-tristis* L., *Ipomaea* spp., *Solanum* spp., *Datura*, *Nicotiana Tabacum* L., *Tecoma grandiflora* Loisel., *Stereospermum*, *Spathodea campanulata* Beauv., *Lantana Camara* L., *Stachytarbeta indica* Vahl., *Tectona grandis* L., *Vitex Negundo* L., *Clerodendron* spp., *Callicarpa arborea* Roxb., *Coleus*, *Colebrookia oppositifolia* Sm., *Anisomeles ovata* Br., *Antidesma*.

Described from a full-fed larva found in Calcutta 18-ix-42, buried 20-ix-42, and a female emerged 11-x-42.

Moore's figure is much too blue-green in colour. Seitz' description is 'adult larva green, yellow or brown, with thick white oblique stripes bordered with blue, not being contiguous, however, on the mesodorsum'. Hampson states that the 'larva differs from *styx* in having blue streaks above the yellow ones'.

### *Deilephila nerii* L.

Sevastopulo, *Journ. Bomb. Nat. Hist. Soc.*, xl, 407, 1938.

Yellow form—Head and ground colour of body mustard yellow. The ring of the ocellus on the 3rd somite deep purple shading into paler, instead of dark blue, the blue stripe below the pale lateral line very bright. A slight fuscous suffusion above the lateral line and rather more noticeable suffused fuscous patches below. Legs bright magenta. Prolegs and venter distinctly suffused with fuscous. The

white spots on the lateral and dorsal area ringed with olive instead of dark blue.

Two larvae out of a batch of some thirty-five bred from ova in darkness and in very crowded conditions in Calcutta in November 1942. This form is evidently very rare and is possibly produced by unsatisfactory conditions, as these were the only two bred out of several hundred larvae reared during the last eighteen years.

Bell & Scott write :—'In another form of larva the ground-colour of head and body ochreous, with fuscous-grey oblique lateral patches on segments 6 to 12; ocellus darker than in the green form and ringed with black; true legs black. There are also forms with intermediate colouring.'

The larvae of this species were extremely common in Calcutta in November 1942 and a few were found which had the legs blue and the usual green colour replaced on the abdominal somites, with the exception of a narrow stripe above the lateral line, a ring round the spiracles, the venter, and claspers and flap, by pale blue grey.

Bell & Scott describe the typical larva as having the 1st somite soiled green, the 2nd, 3rd, 12th and 13th bright yellow and the rest of the body bluish green suffused with glaucous except on the venter, but all my previous larvae have had the green colour almost uniform all over.

#### *Hippotion boerhaviae* F.

Hamps., *Fauna Brit. Ind.*, Moths, i, 86, fig. 50. 1892.

Hamps., *Ill. Het.*, ix, 56, pl. 175, fig. 1. 1893.

Mell, *Biol. u. System. der Sudchin. Spding.*, 281, pl. ix, figs. 19, 20, pl. xix, figs. 1, 2. 1922.

Seitz, *Seitz Indo-Austr. Bombyces*, x, 564. 1929.

Bell & Scott, *Fauna Brit. Ind.*, Moths, v, 425, pl. v, figs. 9, 10, 11, 12. 1937.

Head dark olive brown. Body dark olive brown, streaked minutely with darker except on the 1st to 4th somite. A black dorsal line from 1st somite to base of horn. A diffused pinkish buff subdorsal stripe, almost obsolete from the posterior part of the 3rd somite to the posterior edge of the 10th, then stronger and less diffused to the base of the horn and thence to the end of the anal flap. A very diffused pinkish buff sublateral stripe from 1st to 11th somite. 4th somite with a large subdorsal ocellus, almost straight above and very convex below, consisting of a black pupil shading into chestnut brown above and with a few white dots on the upper part, the whole surrounded by a creamy line, broader above and narrower below, and then by a black ring. 5th to 10th somites each with an oval subdorsal ocellus, the lower edge more convex than the upper, consisting of a purple brown spot with a transverse horizontal buff bar, ringed with black. A darker patch immediately above each ocellus, the edges diffused and shading into the general ground colour. 5th to 10th somites each with a pale buff subdorsal dot on the posterior portion just above the level of the ocelli. Horn straight and pointing backwards, short, thin, pale greyish buff, the tip cream. Legs pinkish. Venter and prolegs slightly paler olive brown than the dorsum and

sprinkled sparsely with white dots. Spiracles whitish. The thoracic somites slightly tapered.

Pupa in a slight cocoon spun among litter. Pinkish bone colour, speckled from dorsum down to the spiracles with olive brown. A diffused olive brown dorsal stripe on the abdominal somites. Mesothorax with a diffused olive brown subdorsal spot. Venter speckled with black, the speckling more concentrated on the ventro-lateral area and forming a broad stripe. Spiracles black and set in small black spots. Leg and wing cases rather pinker than the rest of the body, the wing cases with a stripe composed of black specks along the costal edge and extending on to the leg sheaths, and with rows of black dots along the veins, a diffused greyish black stripe along the outer margin. Tongue case projecting slightly ventrally and rather more frontally. Cremaster a long, stout, black spine with tip minutely bifid.

Food-plant—*Boerhaavia repens* L. Bell & Scott give, in addition, *Impatiens balsamina* L., *Knoxia mollis* W. & Arn., *Spermacoce* spp. *Glossostigma spathulatum* Arn., *Boerhaavia diffusa* L. My specimens refused cultivated *Impatiens*.

Described from a full-fed larva found in Calcutta 21-x-42, pupated 26-x-42, and a female emerged 8-xi-42.

The references to previous descriptions of the early stages are not easy to follow. Hampson, in the Illustrations of Heterocera, gives a recognisable figure under the name of *theylia* L., but also figures under the name of *rafflesii* Btlr. the same larva as is figured by Bell & Scott in their fig. 9, but which they suggest is a different species. It is not *rafflesii*, whose larva is also figured by Hampson, but under the name of *vinacea* Hamps. The food-plants of both *theylia* and *rafflesii* are given as Rubiaceae of several species. In the Fauna, Hampson repeats the descriptions given in the Illustrations, but groups them all as forms of *theylia*. Seitz gives a very incomplete description and mentions *Morinda umbellata* (Rubiaceae) as food-plant. Bell & Scott give a rather washy figure of the usual brown form and the resulting pupa, and also a figure of the so-called black form, which Hampson, as mentioned above, figures as *rafflesii*, with its pupa; they suggest that, in spite of the apparent similarity of the imago, it is really another species in view of the larval and pupal differences, but no description is given. In the description of the brown form, they mention that all the ocelli have a crescent of pale blue above the upper edge and that there is a round blue supra-spiracular spot on segments 6 to 11. My specimens did not exhibit these. The pupa is described as 'livid bone colour'.

#### NOCTUIDAE.

*Sideridis* *yu* Guen. (*exempta* Wlk.)

Head olive brown. Body olive brown, with an underlying orange tint, minutely speckled with darker. A diffused orange subspiracular stripe, edged above from 1st to 6th somite with white, starting as a broad line on the 1st somite and gradually narrowing until it disappears on the 6th. A double subdorsal series of white specks from



the 2nd to 11th somite, on the 2nd and 3rd somites these specks in a transverse line, from the 3rd to 10th with an anterior inner and a posterior outer pair, on the 11th somite with the anterior and posterior pairs in line with each other. 12th somite with one subdorsal speck. A supra-spiracular and spiracular series of similar specks. All these specks giving rise to a single, very short, black bristle. Spiracles black. A dark purple-brown spot just above the base of the 2nd and 3rd pairs of legs. Legs greenish tinged with brown. Venter and prolegs similar to the dorsum but slightly paler. Shape stoutish.

The larva is quite different to that of any other *Sideridis* or *Leucania* that I have seen or read of, as there are not even traces of longitudinal stripes.

Pupa subterranean in an earthen cell. Bright orange chestnut with traces of a darker dorsal stripe. A dark, dentate, transverse, dorsal ridge on the anterior edge of somites 7 to 10. Apex of abdomen blackish, rugose, with a few short spines. Cremaster a stout spine with bifid tip.

Food-plant—Grasses.

Described from a full fed larva found in Calcutta 18-x-42, buried 25-x-42, and a male emerged 5-xi-42.

*Ilattia octo* Guen.

Gardner, *Indian Forest Records*, vi, 274. 1941.

Head green, with a few minute black specks. Body green, a very fine, irregular, double, whitish, dorsal line, a similar subdorsal line and another similar line just above a narrow whitish lateral stripe. Legs green. Venter and prolegs green, the first two pairs obsolete. A few fairly long single black hairs. Shape long and slender. Becomes tinged with purple before pupation.

Pupa subterranean in an earthen cocoon. Slender. Colour olive brown, the thorax and wing cases more tinged with olive, a dark dorsal stripe on the abdominal somites, the intersegmental rings darker. Cremaster a double spine.

Food-plant—*Amaranthus* sp. Gardner gives *Chenopodium album* L., so would possibly eat other members of the families Amarantaceae and Chenopodiaceae.

Described from a full-fed larva found in Calcutta 22-x-42, buried 23-x-42, and a female emerged 31-x-42.

Gardner, after giving the structural characteristics of the genus, gives the following description:—'Head and body green, sometimes with a darker line above the spiracular level along the body; legs pale; spiracles pale with a fine dark rim. The granules on the head not as sharply defined as in *natalis*. Length about 23 mm.'

*Symitha nolalella* Wlk.

Head yellowish green. Body pale green with traces of a dark dorsal line. A double dorsal, a subdorsal, a double lateral, and a sublateral series of whitish specks giving rise to single, longish, white hairs. A pale spiracular line between the two lateral series of specks. Legs and prolegs pale green.

The larvae live semi-gregariously on young shoots of the food-plant, which they cover with a slight silken web.

Pupa in a canoe-shaped cocoon of pure white silk, the top flattened and surrounded by an erect fringe of short, coarse threads. Pale green, an olive-brown dorsal stripe from head to cremaster, the intersegmental rings also olive tinged. Later the ground colour turns to whitish and the dark markings become chestnut. Apex of abdomen blunt, with three dark chitinous teeth laterally. Spiracles chestnut. Cuticle coarsely punctate.

Food-plant—*Lagerstroemia Flos-reginae* Retz. and *L. indica* L.

Described from a full-fed larva found in Calcutta 4-x-42, spun 6-x-42, and a male emerged 12-x-42.

*Polydesma umbricola* Bsd.

Head dark brown with a pale, inverted, wide-armed, V-shaped mark. Body mottled with dark and pale brown, the colour actually consisting of dots and streaks on a creamy ground. The pale areas distributed as follows:—a dorsal stripe on the first three somites; a dorsal blotch on the posterior portion of the 4th somite; a dorsal stripe, somewhat irregular in outline, from the posterior half of the 5th to the anterior half of the 7th somite; a similar dorsal stripe from the posterior half of the 8th somite backwards; and the subdorsal and lateral areas of the 8th and 9th somites. A blackish dorsal V-shaped mark on the forepart of the 4th somite, and the pale dorsal stripe on the forepart of the 5th somite with a blackish line on either side. A double blackish spiracular line, below which the colour is slightly paler. 11th and 12th somites with very small, black, paired, dorsal tubercles. Legs pale brown with wide rings of dark. Venter and prolegs greenish, the first pair reduced slightly. Spiracles black. A few short colourless hairs arising from dark specks. Rests with the fore part of the body slightly humped.

Pupa in a thin cocoon of tough, rather papery, white, silk, spun in an angle of the box in captivity and covered with a leaf; in nature possibly in a chink in the bark of the tree on which it has fed. Pale chestnut, so thickly covered with white bloom that the colour is obscured. Shape slender. Cremaster a small bunch of hooked spines.

Food-plant—*Albizia stipulata* Boiv.

Described from a full-fed larva found in Calcutta 15-x-42, spun 18-x-42, and a male emerged 1-xi-42.

*Fodina pallula* Guen.

Head pale green. Body pale green. A whitish dotted dorsal line, a whitish subdorsal line and a double whitish dotted lateral line. 1st to 5th and 11th somites each with a black dorsal dot on the anterior portion, the 1st somite with an additional black dot below the origin of the subdorsal line. Spiracles whitish with a brown speck at the lower end. A few short black hairs. Legs and prolegs very pale green. Anal claspers rather long. The dorsal and lateral dotted lines fade when completely full fed, and the larva turns purple before pupation.

Pupa subterranean in a slight earthen cocoon. Dark purplish brown, the ventral area of the abdomen slightly paler. Thorax and abdomen rather coarsely punctate. Cremaster two down curved spines.

Described from a full-fed larva found in Calcutta 18-ix-42, buried 21-ix-42, and a female emerged 2-x-42.

## PYRALIDAE.

*Glyphodes unionalis* Hbn.

Head yellow green. Body jade green, a dark dorsal and a white spiracular line. 2nd somite with a minute black subdorsal speck. A few colourless hairs. Legs and prolegs colourless, glassy. Lives in a silk-lined, folded leaf. As in most green Pyralid larvae, it is probable that the skin is unpigmented, the colour being due to the blood, fat and contents of the intestines shewing through.

Pupa in a slight cocoon between leaves. Olive brown, the wing cases and venter greenish. A distinct raised dorsal keel on the anterior abdominal somites. Cremaster a stout spike armed with minute hooked spines.

Food-plant—Jasmine.

Described from a full-fed larva found in Calcutta 20-ix-42, pupated 21-ix-42, and a male emerged 27-ix-42.

*Glyphodes vertumnalis* Guen.

Head yellow, mouth-parts black. Body blue-green, a white spiracular line, below which the body is yellower. The blue tint chiefly due to the contents of the intestines. 1st somite with a black dorsal plate with a median pale green line. 2nd and 3rd somites each with one anterior and two posterior raised black dorsal spots with a subdorsal spot between them and a larger spot external to the subdorsal, two spots immediately above the spiracular line. 4th to 11th somites each with two pairs of black dorsal spots, a lateral and sublateral, also a ventro-lateral spot situated at the base of the prolegs on somites 6 to 9. 12th somite with a large round black dorsal spot, a lateral and a sublateral. Anal plate edged with black and with a black streak across the base. Legs whitish ringed with black basally. Venter and prolegs yellowish. All the black spots raised. Except for the black spots the skin is unpigmented, the blood and fat are yellow, and the blue-green colour of the living larva is due to the contents of the intestines. Lives in a silk-lined, folded leaf. Turns yellow before pupation.

Pupa in a slight cocoon either in chinks of bark or under the coping of a wall near the food-tree. Chestnut brown, paler on the venter. Leg and proboscis sheaths projecting slightly beyond the wing cases. Head produced into a slightly upturned snout. Cremaster a stout spike terminating in a few hooked spines.

Food-plant—*Tabernaemontana coronaria*.

Described from a full-fed larva found in Calcutta 15-ix-42, pupated 17-ix-42 and a male emerged 25-ix-42.

(To be continued)